

US-CL-CURRENT: 235/462.01,235/462.1 ,235/462.24 ,235/470

US-PAT-NO: 6315200

DOCUMENT-IDENTIFIER: US 6315200 B1

TITLE: Encoded data card reading system

DATE-ISSUED: November 13, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Silverbrook; Kia	Sydney	N/A	N/A	AUX
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Walmsley; Simon Robert	Sydney	N/A	N/A	AUX
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US-CL-CURRENT: 235/454,235/462.01 ,235/462.1 ,235/462.24 ,235/470

ABSTRACT:

A data structure is disclosed encoded on the surface of an object comprising a series of block data regions with each of the block data regions including: an encoded data region containing data to be decoded in an encoded form; a series of clock marks structures located around a first peripheral portion of the encoded data region; and a series of easily identifiable target structures located around a second peripheral portion of the encoded data region. The block data regions can further include an orientation data structure located round a third peripheral portion of the encoded data region. The orientation data structure can comprises a line of equal data points along an edge of the peripheral portion. The clock marks structures can include a first line of equal data points in addition to a substantially adjacent second line of alternating data points located along an edge of the encoded data region. The clock mark structures can be located on mutually opposite sides of the encoded data region. The target structures can comprise a series of spaced apart block sets of data points having a substantially constant value of a first magnitude except for a core portion of a substantially opposite magnitude to the first magnitude. The block sets can further includes a target number indicator structure comprising a contiguous group of the values of the substantially opposite magnitude. The data structure is ideally utilized in a series of printed dots on a substrate surface.

CLAIMS:

We claim:

1. A data structure encoded on the surface of an object comprising:

a series of block data regions with each of said block data regions including:

an encoded data region containing data to be decoded in an encoded form;

a series of clock marks structures located around a first peripheral portion of said encoded data region;

a series of easily identifiable target structures located around a second peripheral portion of said encoded data region; and

an orientation data structure located round a third peripheral portion of said encoded data region.

2. A data structure as claimed in claim 1 wherein said orientation data structure comprises a line of equal data points along an edge of said peripheral portion.

3. A data structure as claimed in claim 2 wherein said clock marks structures include a first line of equal data points in addition to a substantially adjacent second line of alternating data points located along an edge of said encoded data region.

4. A data structure as claimed in claim 3 wherein said clock mark structures are located on mutually opposite sides of said encoded data region.

5. A method of decoding a data structure encoded on the surface of an object, said data structure comprising:

a series of block data regions with each of said block data regions including:

an encoded data region containing data to be decoded in an encoded form;

a series of clock marks structures located around a first peripheral portion of said encoded data region;

a series of easily identifiable target structures located around a second peripheral portion of said encoded data region;

the method comprising the steps of:

(a) scanning said data structure;

(b) locating the start of said data structure;

(c) locating said target structures including determining a current orientation of said target structures;

(d) locating said clock mark structures from the position of said target structures;

(e) utilizing said clock mark structures to determine an expected location of bit data of said encoded data region; and

(f) determining an expected data value for each of said bit data.

6. A method as claimed in claim 5 wherein said clock marks structures include a first line of equal data points in addition to a substantially adjacent second line of alternating data points located along an edge of said encoded data region and said utilizing step (e) comprises running along said second line of alternating data points utilizing a pseudo phase locked loop type algorithm so as to maintain a current location within said clock mark structures.

7. A method as claimed in claim 6 wherein said determining step (f) comprises dividing a sensed bit value into three contiguous regions comprising a middle region and a first lower and a second upper extreme regions, and:

with those values within a first lower region, determining the corresponding

bit value to be a first lower value;

with those values within a second upper region, determining the corresponding bit value to be a second upper value;

with those values in said middle regions, utilising the spatially surrounding values to determine whether said value is of a first lower value or a second upper value.

8. A method of determining an output data value of sensed data comprising:

(a) dividing a sensed data value into three contiguous regions comprising a middle region and a first lower and a second upper extreme regions, and:

with those values within a first lower region, determining the corresponding bit value to be a first lower value;

with those values within a second upper region, determining the corresponding bit value to be a second upper value; and

with those values in said middle regions, utilizing the spatially surrounding values to determine whether said value is of a first lower value or a second upper value.

8 Claims, 232 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 140

US-CL-CURRENT: 348/375,369/14 ,396/312

US-PAT-NO: 6322181

DOCUMENT-IDENTIFIER: US 6322181 B1

TITLE: Camera system including digital audio message recording on photographs

DATE-ISSUED: November 27, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Silverbrook; Kia	Sydney	N/A	N/A	AUX
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US-CL-CURRENT: 347/2,348/375 ,369/14 ,396/312

ABSTRACT:

A camera system is disclosed having a sensor for sensing an image; a processor for processing the sensed image in accordance with a predetermined processing requirement, if any; an audio recorder for recording an audio signal to be associated with the sensed image; a printer for printing the processed sensed image on a first area of a print media supplied with the camera system, in addition to printing an encoded version of the audio signal on a second area of the print media. Preferably the sensed image is printed on a first surface of the print media and the encoded version of the audio signal is printed on a second surface of the print media. The print media can be supplied in the camera system on a detachable print roll and the printer means includes at least one ink jet print head for printing the processed sensed image and a second print head for the encoded version of the audio signal. The encoding can include Reed-Solomon encoding of the audio-signal. The encoded version can be further modulated with a high frequency component such as a checkerboard pattern to assist in sensing of the encoded version.

CLAIMS:

We claim:

1. A camera system comprising:

sensor means for sensing an image;

processing means for processing said sensed image in accordance with a predetermined processing requirement, if any;

audio recording means for recording an audio signal associated with said sensed image; means for processing said audio signal into a fault tolerant encoded digital version;

printer means including at least one pagewidth printhead for printing said processed sensed image using an ink jet printing process on a first area of a print media and for printing said fault tolerant encoded digital version of said audio signal on a second area of said print media, as an array of ink dots, said camera system comprising a portable hand held unit for the imaging of scenes by said image sensor means and printing said scenes directly out of said camera system via said printer means.

2. A camera system as claimed in claim 1 wherein said sensed image is printed on a first surface of said print media and said encoded version of said audio signal is printed on a second surface of said print media.

3. A camera system as claimed in claim 1 wherein said print media is supplied in said camera system on a detachable print roll.

4. A camera system as claimed in claim 1 wherein said printer means includes at least one ink jet print head for printing said processed sensed image in addition to a second print head for printing said encoded version of said audio signal.

5. A camera system as claimed in claim 1 wherein said encoding comprises Reed-Solomon encoding of said audio-signal.

6. A camera system as claimed in claim 1 wherein said encoded version is modulated with a high frequency component to assist in sensing of said encoded version.

7. A camera system as claimed in claim 6 wherein said high frequency component comprises a checkerboard pattern.

8. A camera system as claimed in claim 1, wherein said encoded version of said audio signal is printed as an array of ink dots.

9. A camera system as claimed in claim 8, wherein said ink dots are printed on the reverse side of the print media to which said sensed image is printed.

10. A method of recording an audio signal associated with a photograph, the method comprising:

sensing an input image;

printing using an ink jet printing process said input image using a pagewidth printhead on a first surface of a print media;

recording an associated audio signal, processing said associated audio signal into a fault tolerant encoded digital version and printing said encoded version of said audio signal on a second surface of said print media as an array of ink dots.

10 Claims, 6 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 4

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4	IS&R	2	("5486686").PN.
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27	BRS	353	silverbrook.in.
28	BRS	5	LAPSTUN.in.

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